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Dietary Strategies for the Management of Cardiovascular Risk

Enhanced low density lipoprotein-cholesterol lowering efforts by consuming plant stanols as part of a low saturated fat diet

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It is well recognised that decreased saturated fat intake independently reduces low-density lipoprotein cholesterol (LDL-C) levels, irrespective of the type of macronutrient that is used to replace dietary saturated fat. In addition, it is acknowledged that daily intakes of 1.5 to 2.4 g of plant stanols/plant sterols lead to reductions in LDL-C of 7 to 10% within 2 to 3 weeks. Individuals who wish to maintain healthy cholesterol levels are increasingly interested in the combined effects of dietary approaches to blood lipid level reduction.

A systematic evidence-based review was conducted to determine the benefits of consuming 2 g/day of plant stanols as part of a diet low in saturated fat compared to the benefits of consuming a low saturated fat diet alone. Using the electronic search tool Dialog[®], a comprehensive literature search of 8 databases was undertaken to retrieve relevant human studies wherein the combined efficacy of consuming a diet low in saturated fat and 2 g/day of plant stanols (as plant stanol ester) on LDL-C levels was assessed. Only studies that met all of the pre-defined inclusion criteria and none of the pre-defined exclusion criteria were included in the assessment. A diet low in saturated fat was defined as a dietary saturated fat intake of $\leq 10\%$ of the total daily energy intake.

Of the 133 full length publications retrieved, a total of 5 publications (representing 6 strata, all randomised, placebo-controlled trials) were found to be eligible for inclusion in the scientific assessment. Amongst the 6 strata, the target intakes of plant stanols ranged from 1.8 to 2.3 g/day, and saturated fat intakes were $\leq 10\%$ of total energy. A 2-fold greater reduction in LDL-C (range 1.6- to 3.4-fold) was observed when plant stanols (delivered as plant stanol ester) were consumed as part of a diet low in saturated fat than when a diet low in saturated fat was consumed alone. The percentage relative LDL-C changes after consuming plant stanols as part of a low saturated fat diet ranged from -7.9 to -23.6% and after consuming a low saturated fat diet alone ranged from -3.9 to -12.0% ^(1–5). Of the 5 strata where differences between the groups were recorded, statistical significance was reached in 4 of the groups ($P < 0.05$).

Although the LDL-C lowering mechanism of plant stanol ester remains to be fully elucidated, its role in the suppression of intestinal cholesterol absorption complements the mechanism of LDL-C lowering resulting from a reduced intake of dietary saturated fat. The results show that when consumers combine efficacious dietary approaches to lower LDL-C the effect is enhanced compared to that obtained from a single dietary approach.

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